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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,309	09/06/2000	Walter Callen	DIVER1350-2	9418

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EXAMINER	
HUTSON, RICHARD G	

ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 07/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/656,309	CALLEN ET AL.	
	Examiner	Art Unit	
	Richard G Hutson	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4/21/2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-42 and 53-107* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *53-64* is/are allowed.

6)☒ Claim(s) *31-42 and 65-97* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicants amendment of the specification, amendment of claim 31, 32, 53, 54, 65, 66, 77, 78 and the addition of new claims 98-107 in the paper of 4/21/2004, is acknowledged. Claims 31-42 and 53-107 are at issue and are present for examination.

Applicants' arguments filed on 4/21/2004, have been fully considered and are deemed to be persuasive to overcome some of the rejections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 65-76, 77-88 and 89-97 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

This rejection was stated in the previous office actions as it applied to claims 65-76, 77-88 and 89-97. Applicants have amended claims 65, 66, 77, 78 and the added new claims 98-107 and traverse this rejection as it applies to these new claims.

Applicants submit a Rule 132 declaration by co-inventor Dr. Walter Callen to address the Patent Office's concerns regarding the above rejection. The declaration submitted by Dr. Callen is fully acknowledged. In this declaration, Dr. Callen declares that assays for identifying nucleic acids that encode polypeptides having polymerase activity and that procedures for identifying polypeptides having polymerase activity under varying conditions were conventional and routine in the art at the time of the invention. Applicants thus submit that accordingly one of ordinary skill in the art using the teaching of the specification would have been able to ascertain what polymerase-encoding-encoding nucleic acids were within the scope of the claims with reasonable clarity to recognize applicants were in possession of the invention at the time of filing.

Applicants arguments are acknowledged, however, found nonpersuasive. Applicants argue that one of ordinary skill in the art using the teaching of the specification would have been able to ascertain what polymerase-encoding-encoding nucleic acids were within the scope of the claims with reasonable clarity to recognize applicants were in possession of the invention at the time of filing. While this may somewhat be acknowledged it remains that one of ordinary skill in the art would have to be presented with any species which was to be analyzed for its inclusion in the claimed genus. Without the presentation of such a species, one of ordinary skill in the art would not realize that the applicants were in possession of a majority of those species encompassed by the claimed genus.

Applicant is referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

Claims 31-42, 65-88 and 89-97 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of generating a nucleic acid that encodes a polypeptide having polymerase activity comprising: obtaining a nucleic acid comprising SEQ ID NO:1 and sequences complementary thereto and modifying, deleting or adding one or more nucleotides in said sequence, wherein said variant maintains polymerase activity, does not reasonably provide enablement for any method of generating a nucleic acid that encodes a polypeptide having polymerase activity: comprising obtaining a nucleic acid comprising obtaining a nucleic acid sequence comprising a sequence having at least 70% identity to SEQ ID NO: 1 or a nucleic acid comprising a fragment of at least 30 consecutive nucleotides of a sequence having at least 70% identity to the sequence set forth in SEQ ID NO: 1 and encoding a polypeptide having polymerase activity or its complement and modifying, deleting or adding one or more nucleotides in said sequence. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

This rejection was stated in the previous office actions as it applied to claims 65-76, 77-88 and 89-97. Applicants have amended claims 65, 66, 77, 78 and the added new claims 98-107 and traverse this rejection as it applies to these new claims.

Applicants continue to traverse this rejection on the basis that methods for changing or varying nucleic acids sequences were well known in the art at the time of invention and that there is no requirement that every way of carrying out an invention be expressly described. The filing of the above declaration in support of applicants position is acknowledged, however, is not found persuasive.

To address this rejection, applicants submit for consideration a Rule 132 expert declaration by the co-inventor Dr. Walter Callen. The declaration submitted by Dr. Callen is fully acknowledged. In this declaration, Dr. Callen declares that procedures for modifying nucleic acids were conventional and routine in the art at the time of invention and that one of ordinary skill in the art using the teachings of the specification would have been able to select any known method of modifying nucleic acids to make a variant of SEQ ID NO: 1 or a variant of a nucleic acid having 70% sequence identity to SEQ ID NO: 1 or a variant of a nucleic acid comprising a fragment of at least 30 consecutive nucleotides of a sequence having at least 70% identity to the sequence set forth in SEQ ID NO: 1, to practice the methods of the invention without undue experimentation.

Applicants argument is not found persuasive because while methods to produce variants of a known sequence such as site-specific mutagenesis, random mutagenesis, etc. are well known to the skilled artisan producing variants as claimed by applicants

(i.e., encoding a polymerase) requires that one of ordinary skill in the art know or be provided with guidance for the selection of which of the infinite number of variants which are to be modified by the claimed method, have the claimed property. Without such guidance one of ordinary skill would be reduced to the necessity of producing and testing all of the virtually infinite possibilities. This would clearly constitute undue experimentation. While applicants continue to argue that the art teaches and is enabled for numerous methods of modification of nucleic acids, the basis for the rejection is not based on the lack of enablement of the different recited nucleic acid modification methods, but rather the lack of enablement of those starting materials of the claimed methods, specifically those nucleic acids having a mere 70% identity to the sequence set for the in SEQ ID NO: 1 or at least 30 consecutive nucleotides of said sequence.

While enablement is not precluded by the necessity for routine screening, if a large amount of screening is required, the specification must provide a reasonable amount of guidance with respect to the direction in which the experimentation should proceed. Such guidance has not been provided in the instant specification. As stated previously, the specification does not establish: (A) regions of the protein structure which may be modified without effecting function/activity; (B) the general tolerance of SEQ ID NO: 1 or those sequences comprising 30 contiguous nucleotides having a mere 70% sequence identity to SEQ ID NO: 1, to modification and extent of such tolerance; (C) a rational and predictable scheme for modifying any nucleic acid residue of SEQ ID NO: 1 or those sequences comprising 30 contiguous nucleotides having a mere 70% sequence identity to SEQ ID NO: 1 with an expectation of obtaining the desired

biological function; and (D) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Applicants declarations stating that it was considered routine by one skilled in the art at the time of the invention to screen for multiple substitutions or multiple modifications in a nucleic acid sequence for functional variations is acknowledged, however, as stated above, while methods to produce variants of a known sequence such as site-specific mutagenesis, random mutagenesis, etc, are well known to the skilled artisan, producing variants as claimed by applicants (i.e. encoding a polymerase) requires that one of ordinary skill in the art know or be provided with guidance for the selection of which of the infinite number of variants produced by as well as used by the claimed method, have the claimed property. Without such guidance one of ordinary skill would be reduced to the necessity of producing and testing all of the virtually infinite possibilities. This would clearly constitute undue experimentation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard G Hutson whose telephone number is (703) 308-0066. The examiner can normally be reached on 7:30 am to 4:00 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on (703) 308-3804. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Richard G Hutson, Ph.D.
Primary Examiner
Art Unit 1652

rgh
6/23/2004